550581

Jim Tierney
314 W. 6th Street
North Platte, Nebraska 69101
(308) 532-2411

Post-it® Fax Note 7671 | Date 9-5-01 | # of pages ▶ 21
To D.O.E. | From
Co./Dept. | Co.
Phone # | Phone #
Fax # 1-800-967-0739 | Fax #

September 5, 2001

Judy Treichel
Nuclear Waste Task Force
4550 W. Oakey Blvd. Suite 111
Las Vegas, Nevada 89102

RE: On-site option for nuclear waste storage

To Whom It May Concern:

Please see attached information for on-site storage utilizing large granite rectangular blocks for encapsulation.

This information has previously been presented to the Department of Energy (D.O.E. #2000-0052). I believe this concept, which would not require transportation through Nevada, has not been properly considered by the D.O.E. As evidenced by lack of mention in the press.

Hope this is of some help.

Sincerely,

Jim Tierney

Cc: Kaitlin Backlund, Citizen Alert
Mary Manning, Las Vegas Sun
Tony Batt, Donrey Washington Bureau
Keith Rogers, Las Vegas Review Journal
The Nevada Agency for Nuclear Projects
Department of Energy
John Augustine

550581

CONCEPTS

OF

GRANITE

(308) 650-2390

D.O.E # 2000-0052

2

550581

August 27, 2001

To Whom It May Concern:

SUBJECT: Nuclear waste storage and encapsulation of spent nuclear fuel rods, mixed low-level nuclear waste, or transeranic waste.

My state-of-the-art concept will employ the use of 44 to 47-ton blocks of granite (approximately 600 million years old) from Rock of Ages Granite Quarry in Barre, Vermont. The blocks of granite that I will employ in my concept will each be 6' in width, 6' in height, and 15' in length. The quarry will cut, shape, and Core drill a center cut 4 'X4 'X 12' in the block as well as two 18" end caps. A ceramic epoxy sealer will be used to attach the endcaps once the nuclear waste is inside the granite block.

This concept will provide an alternative for spent nuclear fuel rods that are stored on-site at civilian nuclear power reactors in water storage basins. These same granite blocks can also be used as dry casks storage of 55-gallon barrels (each block holds 16 barrels), that can then be transported to a remote site, isolating the waste from the environment for the tens of thousands of years it takes for radioactivity decay. It is beyond deterioration of destruction, unlike methods currently in use or proposed.

In addition to being infinitely more safe and secure, my concept will save you (government or any of the other 38 governments) hundreds of millions of dollars over the current baseline option utilized in other storage methods. The cost of my state-of-the-art concept is 1.3% of what is currently being designed for use by the United States Department of Energy ($334,000 to $420,000) US-estimate. These costs do not include transportation, but are for storage only.

Rock of Ages Barre granite for the Vermont quarry is the world's finest, free from natural flaws, fissure, and joints, and is readily available (millions of tons). This granite is inexpensive to produce and offers great resistance to all environmental hazards, chemical, water and combustion materials.

Kenneth F. Werth

KENNETH F. WERTH

3

Concepts Of Granite

502 Rodeo Road
North Platte, Nebraska 69101

Phone 308-650-2390
Fax 308-532-9776

550581

August 29, 2001

To Whom It May Concern:

I am writing you to let you know of a concept that we have been working on with a Mr. Ken Werth. The concept consists of storage and encapsulation of spent nuclear rods, mixed low level nuclear waste and transeranic waste.

This concept is designed for on-site storage of spent fuel rods. These blocks of granite can be stacked up to six blocks high, which enables a lot of storage in a small amount of space.

I am enclosing his proposal along with density and testing results from Penn State.

His concept is not only unique, but will withstand the test of time.

The hardest material on earth, a diamond, has the hardness of a 10. It cannot be scratched except by other diamonds. The softest materials have a hardness of 1 and are easily scratched. Few materials, except precious stones, are harder than a 7.

Our Barre Granite is a very hard 6-7. No other natural stone used for commercial purposes is any harder or more difficult to break than granite.

I would be very interested in visiting with you in the future.

Please do not hesitate to call if you have any questions.

Thank you for your consideration on this matter.

Sincerely,

Lonnie C. Parsons

LP/PM

4

UNSOLICITED PROPOSAL FOR STORAGE OF NUCLEAR WASTES IN GRANITE BLOCKS

550581

May 7, 2001

Following are estimated costs for 50 test blocks to be used for transportation and storage of spent nuclear fuel rods and/or low-level and transeranic nuclear waste.

ESTIMATED COSTS

Granite blocks	50 @ $50,400	$2,520,000
*Transportation to site	50 @ $12,900	$ 645,000-(ESTIMATE)
**On-site handling		
Kenneth Werth	Fees for concept development/consultation, legal expenses, and staff	$10,000,000
	***TOTAL	$13,165,000

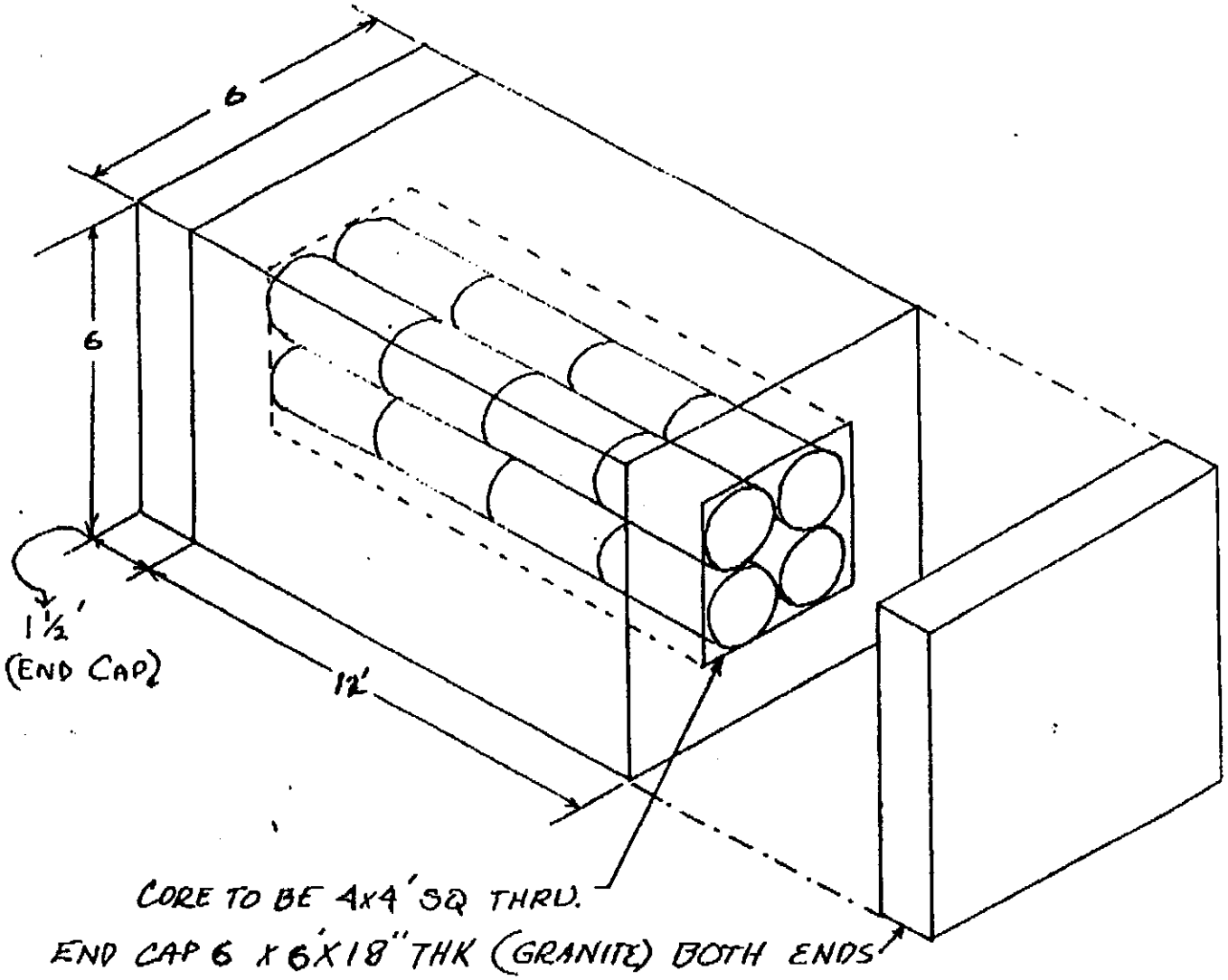
*Transportation costs are related to distance and load. This estimate is based on transport from Rock of Ages quarry in Vermont.

**We have no way of estimating DOE or owner costs for on site handling, loading of waste, and monitoring this program.

KENNETH F. WERTH
6895 Flower Street
Arvada, CO 80004
Tel: 303-424-0790

5

550581



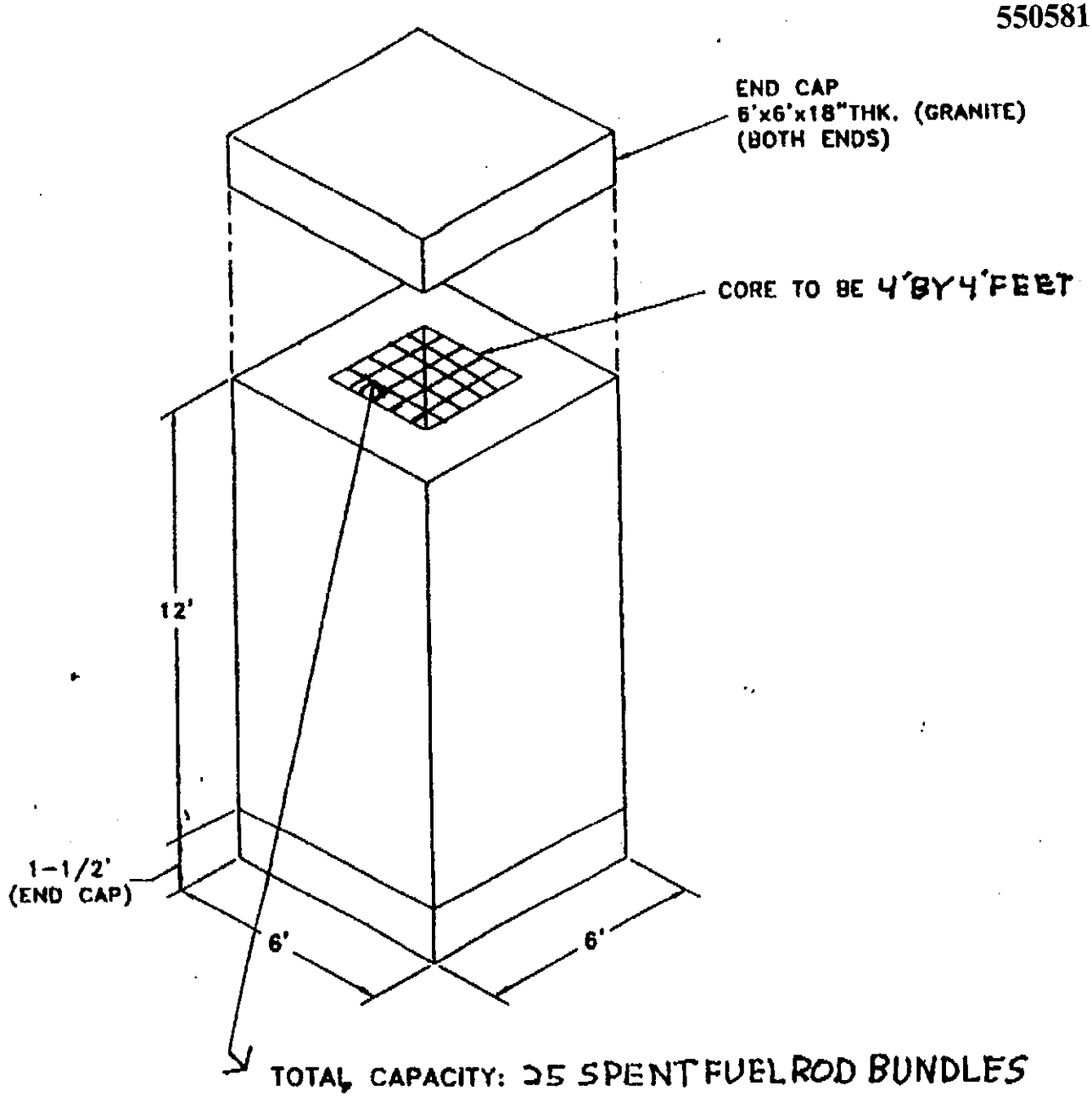
TOTAL CAPACITY XXX CUBIC FEET

NUCLEAR WASTE POLICY ACT OF 1982
TITLE II RESEARCH, DEVELOPMENT, AND DEMONSTRATION REGARDING
DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL.

DESIGNED BY: KENNETH F. WERTH 6895 FLOWER ST. ARVADA, CO 80004 (303)424-0790	DRY CAST STOREAGE PROGRAM	
	GRANITE CONTAINING BLOCK FOR HIGH LEVEL WASTE & SPENT NUCLEAR FUEL RODS	
	SIZE A / FSCM NO. / DWG NO.	REV A
K.H. 8/28/00	SCALE 1:1	SHEET

6

550581



TOTAL CAPACITY: 25 SPENT FUEL ROD BUNDLES

NUCLEAR WASTE POLICY ACT OF 1982
TITLE II RESEARCH, DEVELOPMENT, AND DEMONSTRATION REGARDING
DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL.

DESIGNED BY: KENNETH F. WERTH 6895 FLOWER ST. ARVADA, CO 80004 (303)424-0790	SUBTITLE B INTERIM STORAGE PROGRAM		
	GRANITE CONTAINING BLOCK FOR HIGH LEVEL WASTE & SPENT NUCLEAR FUEL RODS		
	SIZE A	FSCM NO.	DWG NO. PYRMID-028 REV A
01/17/00 RGT	SCALE 1:1		SHEET 1 OF 1

7

550581

Post-it® Fax Note 7671	Date 5/27	# of pages ► 14
To	From Dan Murray	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

ROCK MECHANICS LABORATORY

Department of Mineral Engineering
The Pennsylvania State University

Test Report RML 7/91

PHYSICAL PROPERTY TESTS ON BARRE GRANITE

Supplied by

Rock of Ages Corporation

Barre, Vermont

by

H. R. Hardy, Jr.

E. J. Kimble, Jr.

and

X. Sun

September 6, 1991

8

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Absorption and Bulk Specific Gravity

SUBJECT: Test for Absorption and Bulk Specific Gravity on Specimens of Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Three Specimens, approximately 2" x 2" x 2" were utilized. The bulk specific gravity was determined for each specimen according to ASTM designation C 97-90. The results were:

Specimen No. 1 - 2.65

Specimen No. 2 - 2.65

Specimen No. 3 - 2.65

Lowest Value Obtained - 2.65

Highest Value Obtained - 2.65

Average Value - 2.65.

The absorption was determined for each specimen according to ASTM designation C 97-90. The results were:

Specimen No. 1 - 0.332%

Specimen No. 2 - 0.261%

Specimen No. 3 - 0.259%

Lowest Value Obtained - 0.259%

Highest Value Obtained - 0.332%

Average Value - 0.284%

The tests were performed by Departmental Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

J. Reginald Hardy, Jr.

Dr. J. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1615 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Compressive Strength - Perpendicular/Dry

SUBJECT: Tests for Compressive Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Core material, approximately 2.18" in diameter was provided by the above named company for these tests. This core material was prepared into suitable cylindrical test specimens having an average length of 4.679", and an average diameter to length ratio (D/H) of 0.466. The compressive strength was determined perpendicular to rift plane under dry conditions for each specimen according to ASTM designation C 170-90 and was corrected for D/H ratio as described in C 170-90. The results were as follows:

Specimen No. 1 - 30,697 psi

Specimen No 2 - 30,106 psi

Specimen No. 3 - 31,764 psi

Specimen No. 4 - 31,751 psi

Specimen No. 5 - 24,705 psi

Specimen No. 6 - 30,166 psi

Average - - - - 29,855 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

H. Reginald Hardy Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Compressive Strength - Perpendicular/Wet

SUBJECT: Tests for Compressive Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Core material, approximately 2.18" in diameter was provided by the above named company for these tests. This core material was prepared into suitable cylindrical test specimens having an average length of 4.662", and an average diameter to length ratio (D/H) of 0.467. The compressive strength was determined perpendicular to rift plane under wet conditions for each specimen according to ASTM designation C 170-90 and was corrected for D/H ratio as described in C 170-90. The results were as follows:

Specimen No. 1 -	26,087 psi
Specimen No. 2 -	25,428 psi
Specimen No. 3 -	22,688 psi
Specimen No. 4 -	26,180 psi
Specimen No. 5 -	26,037 psi
Specimen No. 6	24,534 psi
Average - - - -	25,159 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

(814) 865-1618 FAX (814) 865-3248
Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Compressive Strength - Parallel/Dry

SUBJECT: Tests for Compressive Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Core material, approximately 2.0" in diameter was provided by the above named company for these tests. This core material was prepared into suitable cylindrical test specimens having an average length of 4.383, and an average diameter to length ratio (D/H) of 0.464. The compressive strength was determined parallel to rift plane under dry conditions for each specimen according to ASTM designation C 170-90 and was corrected for D/H ratio as described in C 170-90. The results were as follows:

Specimen No. 1 - 30,873 psi

Specimen No. 2 - 31,964 psi

Specimen No. 3 - 28,865 psi

Specimen No. 4 - 33,224 psi

Specimen No. 5 - 29,084 psi

Specimen No. 6 - 30,339 psi

Average - - - - 30,725 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

(814) 863 1618 FAX (814) 865 3248
Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Compressive Strength - Parallel/Wet

SUBJECT: Tests for Compressive Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Core material, approximately 2.0" in diameter was provided by the above named company for these tests. This core material was prepared into suitable cylindrical test specimens having an average length of 4.387", and an average diameter to length ratio (D/H) of 0.465. The compressive strength was determined parallel to rift plane under wet conditions for each specimen according to ASTM designation C 170-90 and was corrected for D/H ratio as described in C 170-90. The results were as follows:

Specimen No. 1 - 24,525 psi

Specimen No. 2 - 25,148 psi

Specimen No. 3 - 20,769 psi

Specimen No. 4 - 26,114 psi

Specimen No. 5 - 20,565 psi

Specimen No. 6 - 26,201 psi

Average - - - - 23,887 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1018 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Modulus of Rupture - Perpendicular/Dry

SUBJECT: Test for Modulus of Rupture on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Test material to prepare six specimens approximately 8" (l) x 4"(W) x 2"(t) was shipped to the Department of Mineral Engineering by the above named company for these tests. The Modulus of Rupture was determined perpendicular to rift plane under dry conditions for each specimen according to ASTM designation C99-87. The results were as follows:

Specimen No. 1 - 2,654 psi

Specimen No. 2 - 2,477 psi

Specimen No. 3 - 2,372 psi

Specimen No. 4 - 2,706 psi

Specimen No. 5 - 2,675 psi

Specimen No. 6 - 2,531 psi

Average - - - - 2,569 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

* The specimen thickness used was approximately 2", rather than the specified 2-1/4". It is expected that this deviation would have little or no affect on the modulus of rupture values.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

(814) 863-1618 FAX (814) 865-3248
Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Modulus of Rupture - Perpendicular/Wet

SUBJECT: Test for Modulus of Rupture on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Test material to prepare six specimens approximately 8"(l) x 4"(w) x 2"(t) was shipped to the Department of Mineral Engineering by the above named company for these tests. The Modulus of Rupture was determined perpendicular to rift plane under wet conditions for each specimen according to ASTM designation C99-87. The results were was follows:

Specimen No. 1 - 1,818 psi

Specimen No. 2 - 1,794 psi

Specimen No. 3 - 1,884 psi

Specimen No. 4 - 1,855 psi

Specimen No. 5 - 1,864 psi

Specimen No. 6 - 1,902 psi

Average - - - - 1,853 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics laboratory of the Department of Mineral Engineering.

* The specimen thickness used was approximately 2", rather than the specified 2-1/4". It is expected that this deviation would have little or no effect on the modulus of rupture values.

W. Reginald Hardy Jr.

Dr. W. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1992

TO WHOM IT MAY CONCERN

Modulus of Rupture - Parallel/Dry

SUBJECT: Test for Modulus of Rupture on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Test material to prepare six specimens approximately 8"(l) x 4"(w) x 2"(t) was shipped to the Department of Mineral Engineering by the above named company for these tests. The Modulus of Rupture was determined parallel to rift plane under dry conditions for each specimen according to ASTM designation C99-87. The results were was fellows:

Specimen No. 1 - 2,078 psi

Specimen No. 2 - 2,082 psi

Specimen No. 3 - 2,169 psi

Specimen No. 4 - 2,132 psi

Specimen No. 5 - 2,021 psi

Specimen No. 6 - 2,102 psi

Average - - - - 2,097 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics laboratory of the Department of Mineral Engineering.

* The specimen thickness used was approximately 2", rather then the specified 2-1/4". It is expected that this deviation would have little or no effect on the modulus of rupture values.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Modulus of Rupture - Parallel/Wet

SUBJECT: Test for Modulus of Rupture on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Test material to prepare six specimens approximately 8"(l) x 4"(w) x 2"(t) was shipped to the Department of Mineral Engineering by the above named company for these tests. The Modulus of Rupture was determined parallel to rift plane under wet conditions for each specimen according to ASTM designation C99-87. The results were was follows:

Specimen No. 1 - 1,841 psi

Specimen No. 2 - 1,841 psi

Specimen No. 3 - 1,726 psi

Specimen No. 4 - 1,718 psi

Specimen No. 5 - 1,797 psi

Specimen No. 6 - 1,809 psi

Average - - - - 1,786 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the Department of Mineral Engineering.

* The specimen thickness used was approximately 2", rather than the specified 2-1/4". It is expected that this deviation would have little or no effect on the modulus of rupture values.

Dr. D. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
118 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Flexural Strength - Perpendicular/Dry

SUBJECT: Tests for Flexural Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Suitable test material to prepare five specimens, approximately 12" (l) x 1-1/2"(w) x 1"(t), was shipped to the Department of Mineral Engineering by the above named company for these tests. The Flexural Strength was determined Perpendicular to rift plane under dry conditions for each specimen according to ASTM designed C 880-89. A span length of 8" was used. The results were as follows:

Specimen No. 1 - 3028 psi

Specimen No. 2 - 2813 psi

Specimen No. 3 - 3046 psi

Specimen No. 4 - 2880 psi

Specimen No. 5 - 2953 psi

Average - - - - 2944 psi

Standard Deviation - - 88 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics laboratory of the Department of Mineral Engineering.

Dr. H. Reginald Hardy, Jr.
Professor and Director
Rock Mechanics laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-1618 FAX (814) 865-3248
116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Flexural Strength - Perpendicular/Wet

SUBJECT: Tests for Flexural Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Suitable test material to prepare five specimens, approximately 12" (l) x 1-1/2"(w) x 1"(t), was shipped to the Department of Mineral Engineering by the above named company for these tests. The Flexural Strength was determined Perpendicular to rift plane under wet conditions for each specimen according to ASTM designed C 880-89. A span length of 8" was used. The results were as follows:

Specimen No. 1 - 2299 psi

Specimen No. 2 - 2394 psi

Specimen No. 3 - 2397 psi

Specimen No. 4 - 2304 psi

Specimen No. 5 - 2329 psi

Average - - - - 2345 psi

Standard Deviation - - 43 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics laboratory of the Department of Mineral Engineering.

H. Reginald Hardy Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

(814) 863-3618 FAX (814) 865-3248
136 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Flexural Strength - Parallel/Dry

SUBJECT: Tests for Flexural Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Suitable test material to prepare five specimens, approximately 12" (l) x 1-1/2"(w) x 1"(t), was shipped to the Department of Mineral Engineering by the above named company for these tests. The Flexural Strength was determined Parallel to rift plane under dry conditions for each specimen according to ASTM designed C 880-89. A span length of 8" was used. The results were as follows:

Specimen No. 1 - 1780 psi

Specimen No. 2 - 1961 psi

Specimen No. 3 - 1836 psi

Specimen No. 4 - 2184 psi

Specimen No. 5 - 2141 psi

Average - - - - 1980 psi

Standard Deviation - - 160 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics laboratory of the Department of Mineral Engineering.

Dr. H. Reginald Hardy, Jr.
Professor and Manager,
Rock Mechanics Laboratory

550581

PENNSTATE

(814) 865-1618 FAX (814) 865-3248

Mining Section
Department of Mineral Engineering
College of Earth and Mineral Sciences

116 Mineral Sciences Building
The Pennsylvania State University
University Park, PA 16802

September 8, 1991

TO WHOM IT MAY CONCERN

Flexural Strength - Parallel/Wet

SUBJECT: Tests for Flexural Strength on Barre Granite supplied by Rock of Ages Corporation, Barre, Vermont. Suitable test material to prepare five specimens, approximately 12" (l) x 1-1/2"(w) x 1"(t), was shipped to the Department of Mineral Engineering by the above named company for these tests. The Flexural Strength was determined Parallel to rift plane under wet conditions for each specimen according to ASTM designed C 880-89. A span length of 8" was used. The results were as follows:

Specimen No. 1 - 1826 psi

Specimen No. 2 - 1676 psi

Specimen No. 3 - 1692 psi

Specimen No. 4 - 1793 psi

Specimen No. 5 - 1659 psi

Average - - - - 1729 psi

Standard Deviation - - 67 psi

The tests were performed by Department Graduate Assistants in the Rock Mechanics Laboratory of the department of Mineral Engineering.

H. Reginald Hardy, Jr.

Dr. H. Reginald Hardy, Jr.
Professor and Manager
Rock Mechanics laboratory